

The Transitioning to Expressway Net Zero Carbon



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Director of Environmental Management Division
Expressway Authority of Thailand (EXAT)

Expressway Authority of Thailand

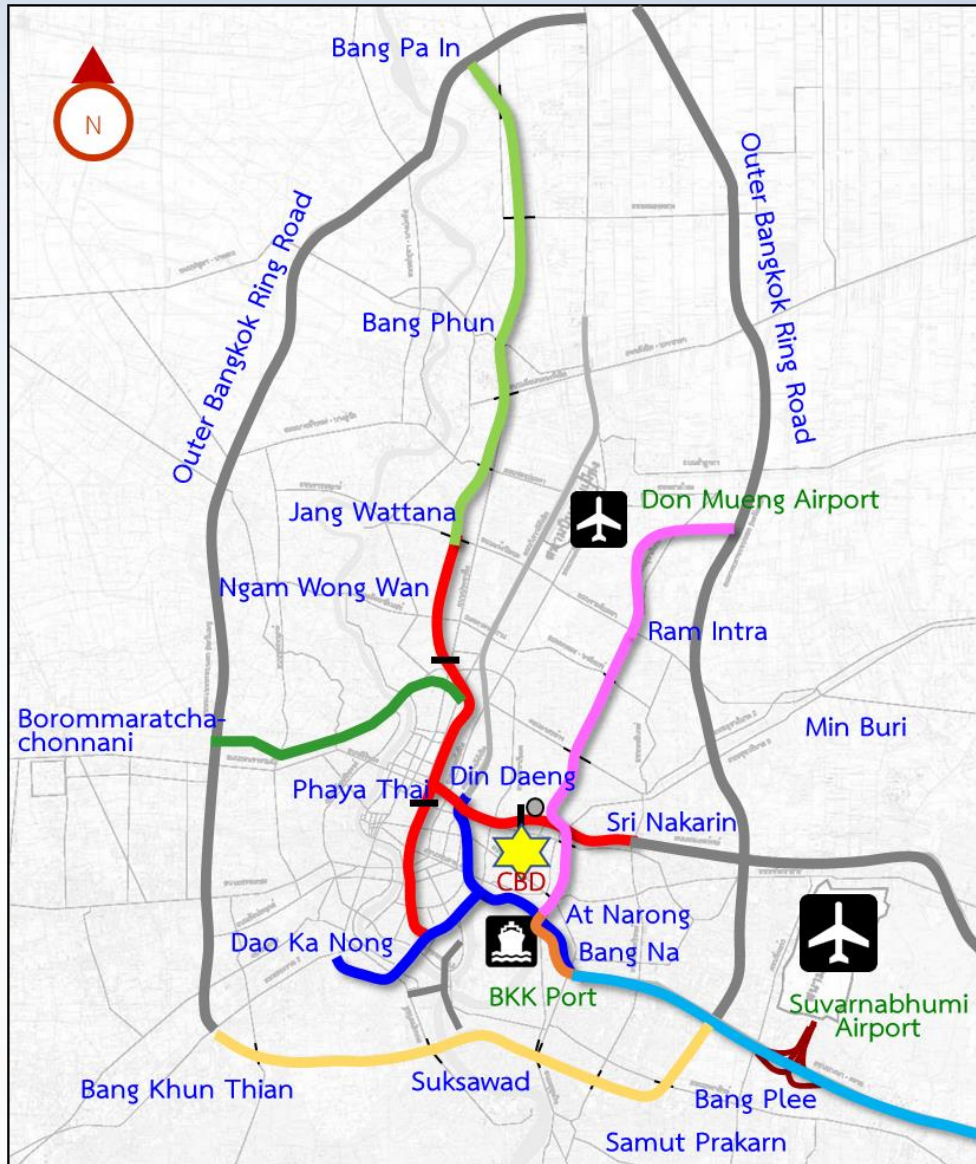
EXAT

- **Founded :** November 27, 1972
- **Operate :** in 1981
- **Business Type :** State enterprise
- **Total Length :** 224.6 Kilometers
- **Headquarter :** EXAT Expressway Administration Center Hui Khwang, Bangkok
- **Website :** www.exat.co.th



- To construct or provide the expressway service by any means and to maintain and preserve it.
- To conduct operations or business relating to the expressway and any business which is in connection with the expressway, or for the benefit of EXAT.

Overview of EXAT



Existing Expressway Network
224.6 km.

- 1. Chaloem Maha Nakhon 27.1 km. (1981-1987)
- 2. Si Rat 38.4 km. (1993-1998)
- 3. Chalong Rat 28.2 km. (1996-2009)
- 4. Udon Rattaya 32.0 km. (1998-1999)
- 5. Burapha Withi 55.0 km. (1998-2000)
- 6. Bang Na-At Narong (S1) 4.7 km. (2005)
- 7. Kanchanapisek (Bang Pli-Suksawad) 22.5 km. (2009)
- 8. Prajitrathaya 16.7 km. (Aug 22, 2016)

(as of 2024)

Concepts for Reducing GHGs and Resource Use Efficiency : The key success

GHG Emissions

5 Expressways

Participates in reducing GHG emissions. Both directly and indirectly, for over 400,000 tonCO₂e

CFO



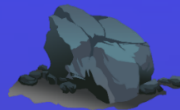
Organization Management to Mitigate Global Warming



Replacing light bulbs with LED



Installing solar cells at office building



Utilizing waste materials for expressway maintenance



Innovative toll collection systems.

Resources Use Management



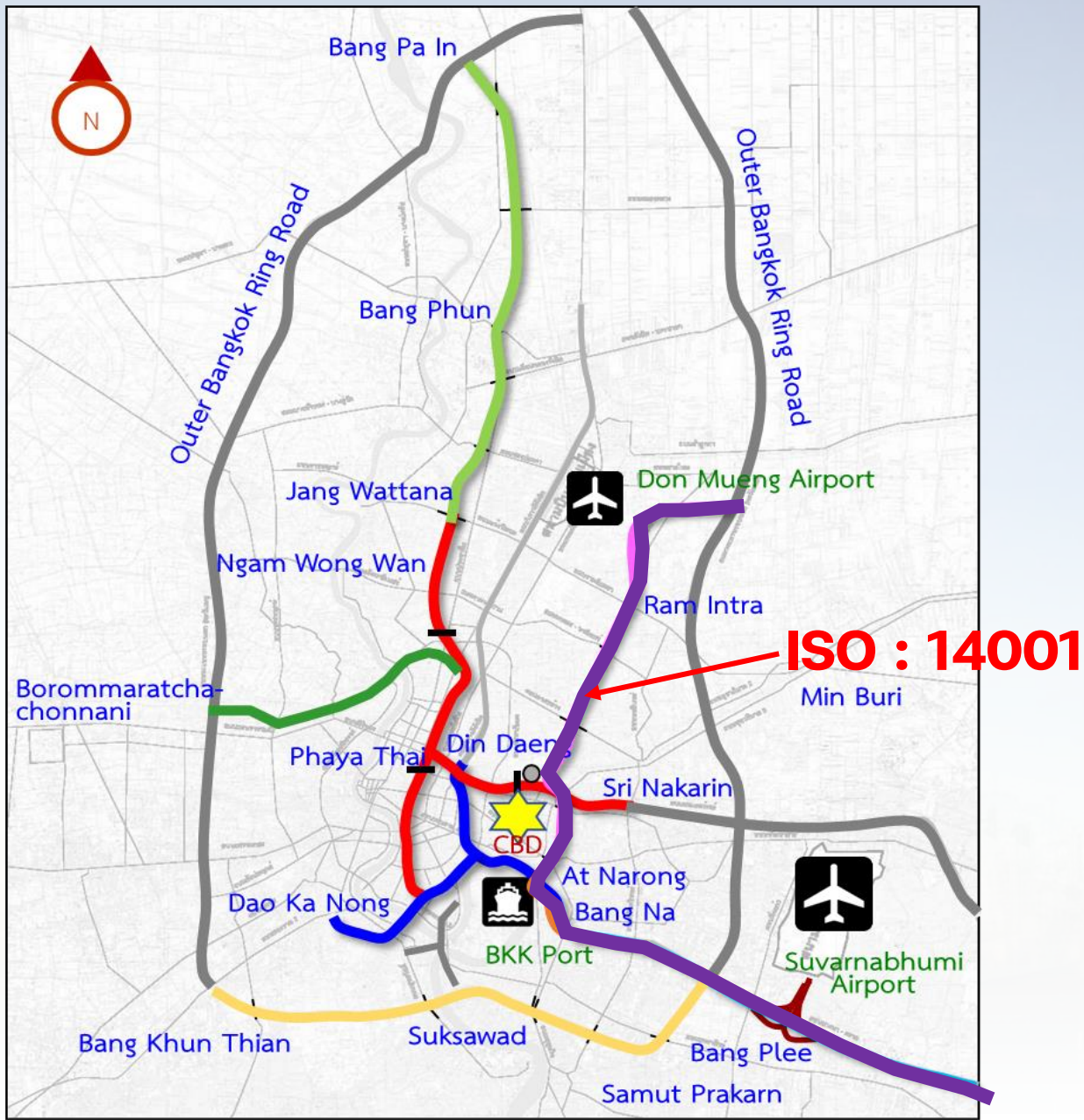
ECO-efficiency



ISO : 14001

87.9 km

ISO 14001



ISO : 14001

- Chalong Rat Expressway
- Burapha Withi Expressway
- Bang Na-At Narong Expressway

87.9 km

Improve the efficiency of resource use such as paper, electricity, water, etc.

Eco-efficiency

$$\text{Eco-efficiency} = \frac{\text{EXAT Expressway Traffic Volume (Vehicle)}}{\text{Greenhouse gases (kg CO}_2\text{e)}}$$

EXAT Traffic Volume

266,662,434

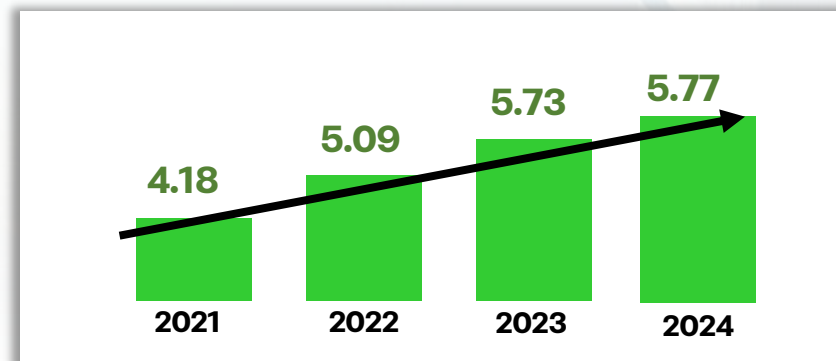
Vehicles

Greenhouse gases

56,884

TonCO₂e

* Data from fiscal year 2024



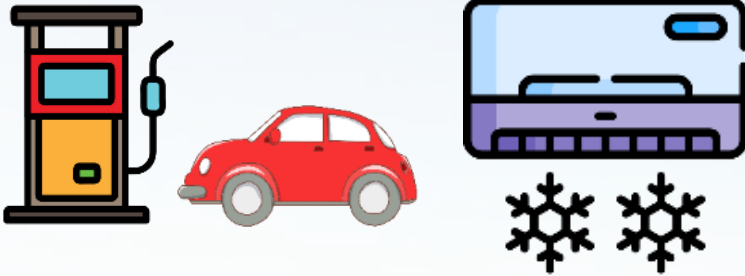
Carbon Footprint for Organization (CFO)

SCOPE

Direct

GHG emissions

1



- combustion of fuel in the production process, expressway service and vehicles
- the use of refrigerants in air conditioners

SCOPE

Indirect

GHG emissions

2



- Purchase of energy consumption such as electricity, heat or steam

SCOPE

Other Indirect

GHG emissions

3



- office equipment usage, construction activities, and maintenance of expressway

Scope of Organizational Carbon Footprint Assessment

1



**EXAT Expressway
Administration Center**

2



**Expressway Control Center
CCB1 CCB 3 CCB 4 CCB 6**

3



5 Expressway routes

4



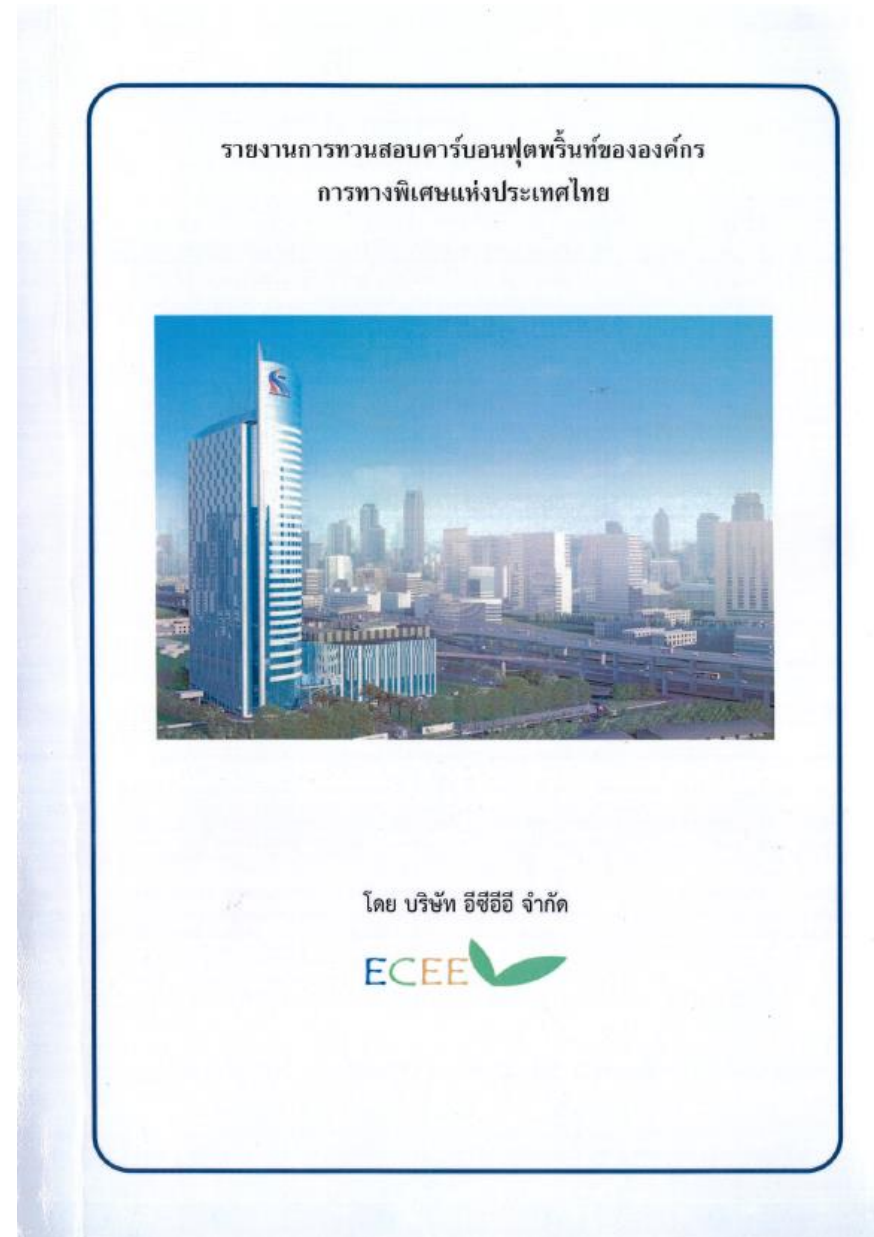
Sathu Pradit office Store

5



**Land Acquisition
Department Building**

External Audits



Carbon Footprint for Organization : EXAT

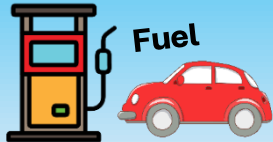


GHG Emissions of EXAT in 2022 = **59,344** tonCO₂e

Three scopes of GHG emissions

SCOPE 1

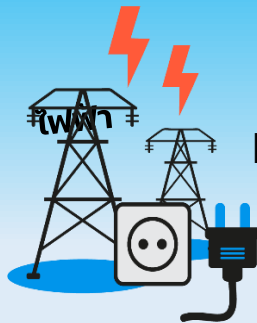
4,443 tCO₂e



7%

SCOPE 2

25,136 tCO₂e



Energy consumption

43%

SCOPE 3

29,765 tCO₂e



Maintenance



Energy Costs



Construction

50%



ระบบรับรองคาร์บอนฟุตพริ้นท์ของผลิตภัณฑ์

EXAT

การทางพิเศษแห่งประเทศไทย

THAILAND GREENHOUSE GAS MANAGEMENT ORGANIZATION (Public Organization) TGO

จากคาร์บอนฟุตพริ้นท์ของผลิตภัณฑ์ (Carbon Footprint of Product)

จากลดคาร์บอนฟุตพริ้นท์หรือจากลดโลกร้อน (Carbon Footprint Reduction or Carbon Footprint of Circular Economy Product)

จากคาร์บอนฟุตพริ้นท์ของผลิตภัณฑ์เศรษฐกิจหมุนเวียน (Carbon Footprint of Circular Economy Product)

1. การได้มาซึ่งวัตถุดิบ

2. การจัดการจากหลังใช้งาน

เปรียบเทียบค่า CFP ของผลิตภัณฑ์

EXAT

NEWS

กทพ. ร่วมพิธีมอบคุณ
และมอบประกาศนียบัตรเครื่องหมายรับรอง
คาร์บอนฟุตพริ้นท์ ประจำปี 2566

วันที่ 21 กันยายน 2566

UPDATE

11

Carbon Footprint for Organization : EXAT

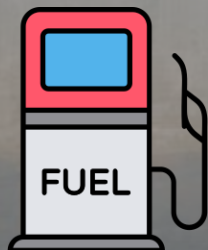


GHG Emissions of EXAT in 2023 = **57,279** TonCO₂e

SCOPE 1

Fuel Consumption

4,360



tCO₂e

SCOPE 2

Electricity Consumption

25,106



tCO₂e

SCOPE 3

Others such as Consumables part, Maintenance materials.

27,693



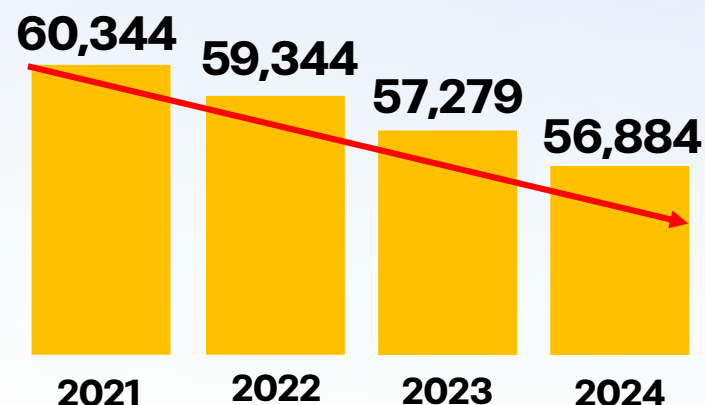
tCO₂e

Carbon Footprint of Organization

CFO $\approx$ 43%

Electricity usage

GHG emissions trends



Roadway & Street Lighting



VMS Traffic Sign Board



Toll Plaza Building



Toll Plaza

EXAT PATHWAY TO NET ZERO



The Expressway Authority of Thailand (EXAT) is elevating its services towards becoming a low-carbon organization, with the goal of fostering sustainable growth in an environmentally friendly society. Committed to addressing global warming, EXAT is working towards carbon neutrality and achieving net zero GHG emissions.



EXAT evaluates the CFO, with GHG emissions equivalent to **59,344 tCO₂e**



2022

(Base Year)



Improving organizational operations to reduce GHG emissions **30%**

2030

2050

2065

Committed to Net Zero GHG emissions
NET ZERO



Replacing light bulbs with LED at toll plaza buildings.



Converting 30% of office vehicles to Evs.



Installing solar cells at the EXAT Expressway Administration Center and toll plaza buildings.



Increasing the proportion of EASY PASS use.



Using hydraulic cement in construction projects.



Utilizing waste materials for expressway maintenance.



Transitioning organizational operations towards
Carbon Neutrality



Replacing expressway light bulbs with LED.



Switching to environmental friendly air conditioning systems.



Converting all office vehicles to EVs.



Installing solar cells at all toll plazas across expressways.



Expanding green/public spaces within expressway areas and engaging in reforestation projects.



Purchasing carbon credits for offsetting emissions.



Shifting 5% of power sources to renewable energy and purchasing 5% Renewable Energy Certificates (RECs).



Switching entirely to hydraulic cement in construction and maximizing the use of waste materials in maintenance.



Transforming empty spaces into green spaces, reforestation projects, or public benefit initiatives.

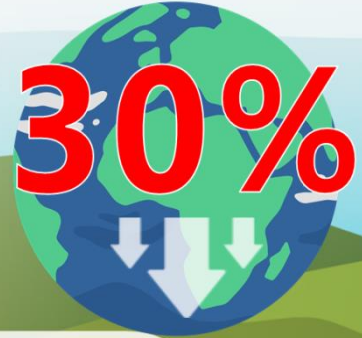


Innovative toll collection systems.



EXAT PATHWAY TO NET ZERO

Improving organizational activities to reduce GHGs by 2030.



Replacing light bulbs with LED at toll plaza buildings.



Increasing the proportion of EASY PASS.



Converting 30% of office vehicles to Evs.



Using hydraulic cement in construction projects.



Installing solar cells at the EXAT Expressway Administration Center and toll plaza buildings.



Utilizing waste materials for expressway maintenance.

“Toward Sustainable Organization”

Environment Management Division, Expressway Project Development Department

Additional
Information



Carbon Neutrality



Transitioning organizational operations towards Carbon Neutrality



**Replacing expressway
light bulbs with LED**



**Converting all office
vehicles to EVs**



**Expanding green/public
spaces within expressway
areas and engaging in
reforestation projects**



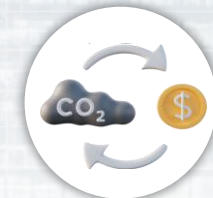
**Shifting 5% of power sources to
renewable energy and
purchasing 5% Renewable
Energy Certificates (RECs)**



**Switching to environmental
friendly air conditioning
systems**



**Installing solar cells
at all toll plazas
across expressways**



**Purchasing carbon
credits for offsetting
emissions**

EXAT's Clean Energy Plan “Solar Rooftop”



Toward Sustainable Organization



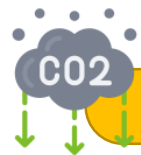
Solar Rooftop Plan

2,040 kWh



Energy Saving

2.36 million unit/year



Reduce CO₂ Emissions

1,141 tCO₂e/year

Phase 1

EXAT Expressway
Administration Center



Installed Capacity

790 kWh

Energy Saving

912,409 unit/year

Reduce CO₂ Emissions

441 tCO₂e/year

Phase 2

CCB3 and CCB6
Toll Plaza Building
Total 8 areas

Installed Capacity

700 kWh

Energy Saving

808,464 unit/year

Reduce CO₂ Emissions

392 tCO₂e/year

Phase 3

CCB4
Toll Plaza Building
Total 25 areas

Installed Capacity

550 kWh

Energy Saving

635,221 unit/year

Reduce CO₂ Emissions

308 tCO₂e/year

Solar PV Rooftop System at EXAT Expressway Administration Center



The project has been registered under Thailand Voluntary Emission Reduction Program (T-VER)



Solar PV Rooftop Project



SCOPE 2

Reduce GHG emissions on average

441.00

TonCO₂e/Year



กระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม

โดย

องค์การบริหารจัดการก๊าซเรือนกระจก (องค์การมหาชน)

ขอมอบใบประกาศเกียรติคุณนี้ให้แก่

การทางพิเศษแห่งประเทศไทย

เพื่อแสดงว่า

โครงการติดตั้งระบบผลิตไฟฟ้าพลังงานแสงอาทิตย์บนหลังคา
อาคารศูนย์บริหารทางพิเศษ

(Solar PV Rooftop System at EXAT Expressway Administration Center)

ได้รับการขึ้นทะเบียนเป็น

โครงการลดก๊าซเรือนกระจกภาคสมัครใจตามมาตรฐานของประเทศไทย มาตรฐาน
(Standard T-VER)

โดยมี ปริมาณก๊าซเรือนกระจกที่คาดว่าจะลด/กักเก็บได้

441 tCO₂eq/year

ระยะเวลาคิดเครดิตของโครงการตั้งแต่วันที่ 1 มกราคม 2567 - 31 ธันวาคม 2573

ให้ไว้ ณ วันที่ 24 กันยายน 2567

นางณัฐริกา วายุภาพ นิตินพ

รองผู้อำนวยการองค์การบริหารจัดการก๊าซเรือนกระจก
รักษาการผู้อำนวยการองค์การบริหารจัดการก๊าซเรือนกระจก

Replacing light bulbs with LED

Replacing light bulbs with LED at toll plaza buildings and operating areas



SCOPE 2



**Reduce GHG emissions
on average**

42.039

TonCO₂e/Year

Using Waste material

Using slag, a waste material, to replace granite in maintaining expressway surfaces



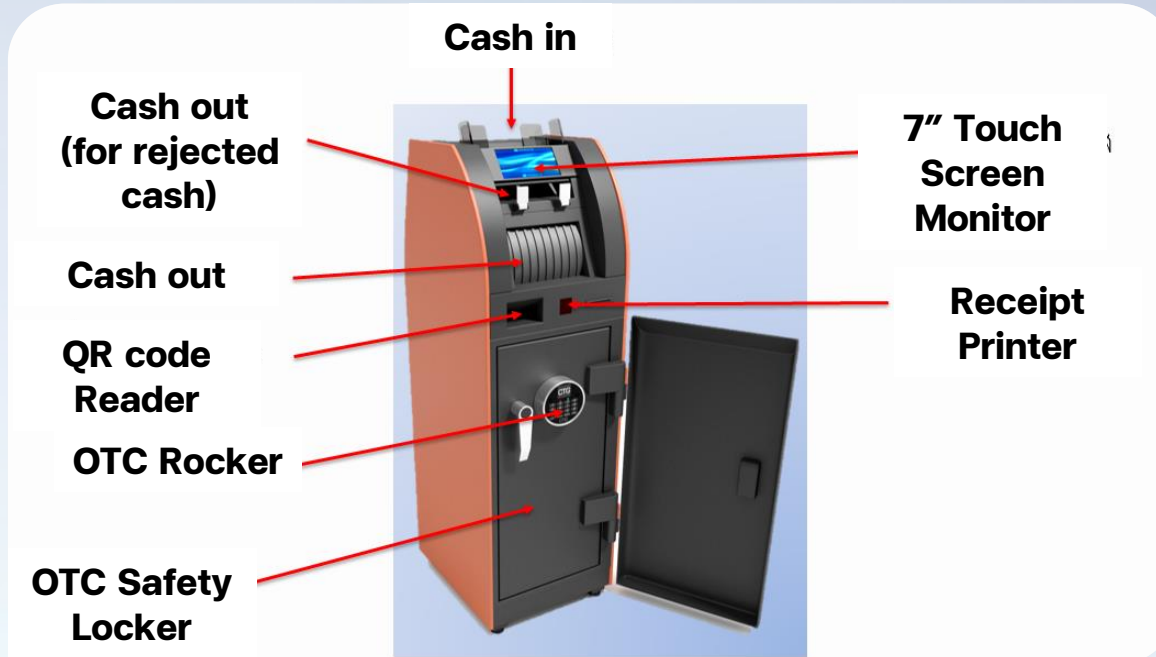
SCOPE 3

Reduce GHG emissions
on average

1,830.623

TonCO₂e

Cash deposit Automatic machine



SCOPE 1 and 3

Kun5C automatic cash deposit machine to reduce resource use, such as staff for counting cash, fuel for travel to collect the cash, cash collecting bags, wire and lead to seal cash bags

collect cash = **57.079** TonCO₂e/Year

**Reduce GHG emissions
on average**

54.019

TonCO₂e/Year

Easy Pass

- To reduce traffic congestion in front of the toll plaza
- To reduce air pollution (PM 2.5, PM 10)
- To reduce resources uses, such as electricity consumption



SCOPE 2 and 3

Vehicle passing by Easy Pass

**Reduce GHG emissions
on average**

22

gCO₂e /vehicle

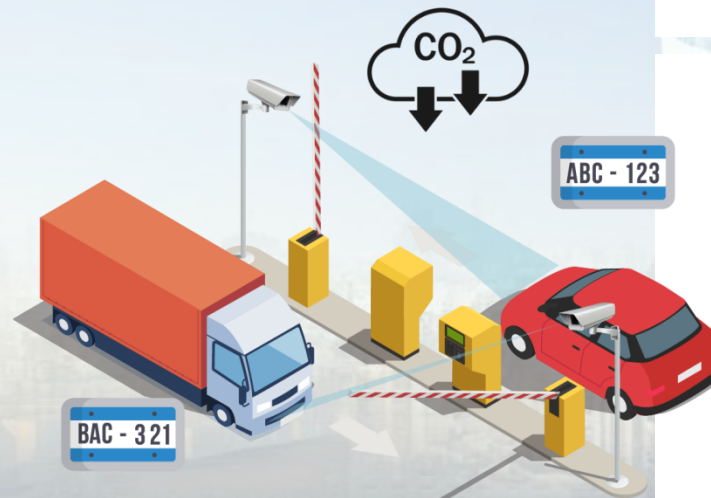
License Plate Recognition System (LPR)

- Installation of LPR system at BuraphaWithi Expressway to reduce traffic congestion in front of the toll plaza
- To reduce air pollution
- To reduce resources uses, such as electricity consumption

Reduce GHG emissions
on average

406.175

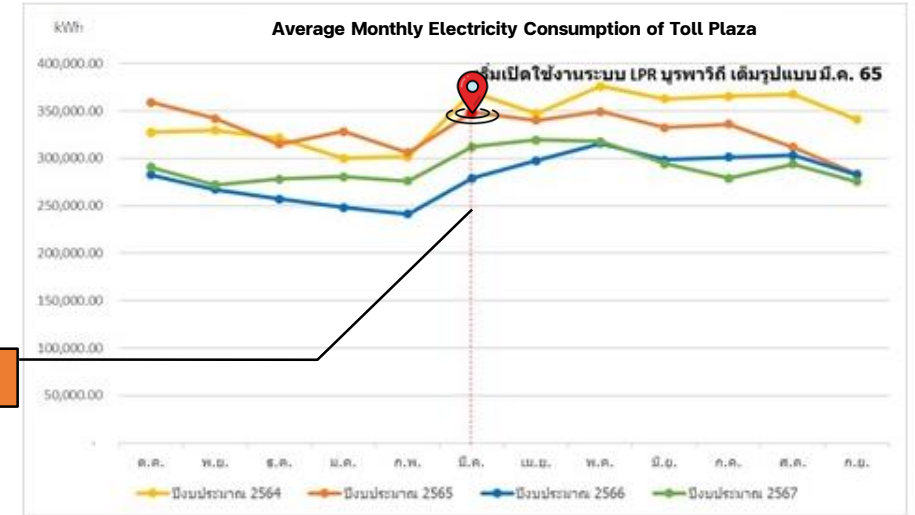
TonCO₂e/Year



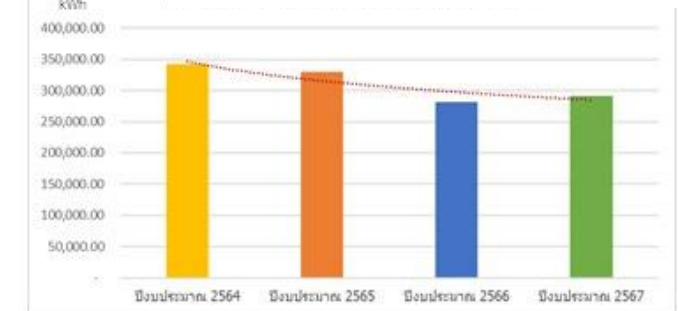
SCOPE 2 and 3

LPR system began in March 2022.

การติดตั้งระบบ License Plate Recognition : LPR ทางพิเศษบูรพาวิถี



Average Monthly Electricity Consumption of Toll Plaza



ปีงบประมาณ	ปริมาณไฟฟ้าที่ผลิตได้		ปริมาณ GHG ที่ลดได้	
	(kWh/เดือน)	(ร้อยละ)	(kg CO ₂ e/เดือน)	(kg CO ₂ e/ปี)
2566	61,353	17.9	36,726	440,713
2567	51,737	15.1	30,970	371,636



Thank You